# ADL Plugs In

***THE DEPARTMENT OF DEFENSE'S ADVANCED DISTRIBUTED LEARNING INITIATIVE HAS NO LESS OF A VISION THAN BRINGING THE SCHOOLHOUSE—INCLUDING TECHNICAL AND DOCTRINAL LEVEL COURSEWORK—TO EVERY COMPUTER IN THE WORLD. PLUGFEST 3, HELD IN NOVEMBER 2000, FOUR YEARS AFTER THE INITIATIVE BEGAN, DEMONSTRATED NOT ONLY THAT ADL IS ALIVE AND WELL, BUT ALSO THAT THERE'S NO GOING BACK. BY KAREN O. SHERMAN, DEPUTY EDITOR***

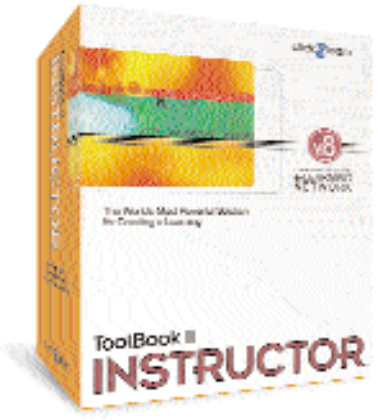
This year's Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC) was abuzz with exciting new developments in the world of defense training: partnering, advances in 3-D simulation, virtual humans, artificial intelligence, e-learning and ADL—Advanced Distributed Learning. Although less glamorous than most of the high-tech, visually stunning training and simulation projects showcased at I/ITSEC, the ADL movement is, quietly, among the most far-reaching training developments of the turn of the century, likely to touch the most lives, whether military or civilian, U.S. or foreign, young or old.

ADL refers, in a nutshell, to receiving higher education or professional development training by registering for a course, attending it, participating in discussion groups, taking the exam, completing the course and receiving your grade on a personal computer without ever leaving your office or home. The experience is made possible through use of the World Wide Web, or Internet, or in some cases through use of an intranet within an organization, e.g., at a school or military installation.

Web-based learning is already in place at many universities and colleges throughout the world. So why did the Department of Defense (DoD) get involved? The answer is vision: visionaries at DoD, within academia and within industry foresaw in the late 1990s the opportunity to create a brave new world of shareable courseware. This would, they felt, facilitate the ability to tailor curricula to meet service and individual learner's needs at reasonable expense. The result of the ADL Initiative's vision, to use an analogy forged by one of the movement's key leaders, Philip Dodds, will be a "repository," or library, of courseware from which educators and course developers all over the world can pull down a package, adjust it to fit, and start training. Dodds is a longtime proponent of the initiative's shareable courseware standard and a key ADL adviser.

## SHUTTING DOWN STOVEPIPES

DoD and the White House Office of Science and Technology Policy launched the ADL Initiative in November 1997. Their first collaboration was with the Instructional Management Systems (IMS) Project, sponsored by Educom, a Washington, DC-based, non-profit consortium of colleges, universities and corporations. Established in February 1997, the IMS Project's goal was to "put into place the essential underpinnings for Internet-based education through open-access technologies." The ADL Initiative wanted to tap into this effort, broaden it, and forge the partnerships between industry, academia and government necessary to ensure success.



The ADL Initiative's strategy was to pursue emerging network-based technologies, facilitate the development of common standards, promote widespread collaboration, enhance performance with next-generation learning technologies, and, most importantly from DoD's point of view, to work with industry to ensure all of this made its way into commercial off-the-shelf products. Like the Army, ADL has its own set of "ables"; it seeks to be interoperable, reusable, adaptable and affordable.

All of this was necessary to avoid the situation DoD and the services have found themselves in time and again throughout the latter part of the 20th century: stovepipe systems and proprietary software that drive costs up astronomically while ensuring a failure to communicate. Computer-based training materials have, for the most part, been developed on a proprietary basis, at high development costs, for one requirement with little possibility of reuse for other learning packages without extensive reprogramming.

In a background statement, the ADL Initiative noted, "American companies alone spend billions of dollars a year on the development of training products, with little of the investment focused on resale or external product development. By developing guidelines, the ADL Initiative seeks to create new markets for training materials, reduce the cost of development and increase the potential return on investment."

## THE ENABLER—SCORM

Those guidelines turned out to be the Sharable Courseware Object Reference Model (SCORM), now in beta testing of its second version, SCORM 1.1. SCORM was developed, through the ADL Initiative's sponsorship, by collaborative efforts between commercial vendors, technology firms, standards watchdog groups, academic experts and governmental participants. It integrated the many existing industry specifications into a single model. By using SCORM, course developers ensure that their products will be interoperable, reusable and, thereby, accessible to just about anyone with a PC.

To bring together SCORM developers, and to test its application, the agency has held "Plugfests," special events that showcase the latest developments in SCORM. The first Plugfest was held in June 2000, the second in August, and Plugfest 3 was held during I/ITSEC 2000. During Plugfest 3, the program announced 10 new ADL prototypes that will receive DoD funding. These are exemplary of the ADL vision and provide a glimpse into the future of distributed distance learning:

- **Air Force Online Career Development Course Prototype** will convert the Health Services Management Journeyman course to SCORM format.
- **Sharing Medical Course Information New Formats for Learning, Leveraging Multimedia and Internet Technologies** will develop a multimedia framework to educate medical students, residents and physicians in pattern recognition, diagnosis and medical problem solving.
- **SCORM-Compliant Assignable Units from Synchronous Distance Learning Efforts** will create reusable, SCORM-conformant blocks of learning content by converting archived live Web-based training sessions (a Coast Guard-sponsored effort).
- **Electronic Tactical Decision Game for Training Joint Peacekeeping Operations in a Distributed Learning Environment** will develop a SCORM-conformant version of a Web-based tactical decision game.
- **Crisis Action Planning Tutorial and On-Line Resource** will develop a prototype job performance aid to plan and execute a crisis action plan in an operational environment.
- **Training Objects from Authoring Instructional Materials Database for Use in Job Performance Support** will develop a software utility to automatically tag tens of thousands of Navy training objects to SCORM guidelines for reuse by all of the services.
- **Use of Next Generation Internet for Asynchronous Combat Casualty Care Training** will demonstrate use of ADL in training healthcare professionals to deal with decision-making for combat-related trauma.
- **Navy/Marine Corps Joint Service Performance Support Data Repository** will establish a joint service library of SCORM-tagged objects for use in performance mentoring systems and training.
- **Web-Based Courseware and Simulation for the Dismounted Warrior** will combine Web-based courseware and simulation to teach tactics, techniques and procedures to dismounted warriors in military operations for urban terrain.
- **Naval Aviation Depot Maintenance Support System** will expand the use of performance support tools for depot maintenance applications.

During a special event at I/ITSEC, "ADL—From Vision to Reality," ADL guru Dodds told the large crowd that "we have turned a corner" and can now talk about training and design. There seemed consensus among the many participants at that event that SCORM works. However, now that the tools are in place, the universal question seems to be, how does one get started? Now that there is a standard for the LMS software infrastructure, will there be standards for the course content? How could this be managed?

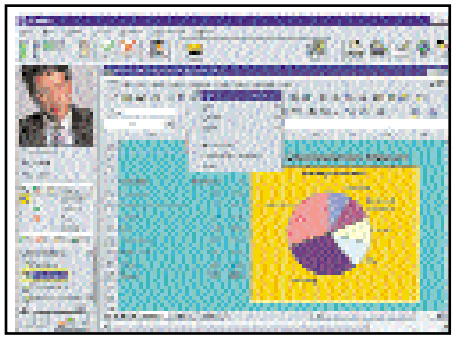
Dodds believes that the next step is developing the ADL repository of learning management systems (LMS). LMS are software programs that handle the administrative aspects of Web-based learning and/or run the course content. An LMS registers the student, provides the course catalog, records student data and generates management reports. An LMS must provide scalability, network security and support for content authoring.

"We've seen a surging degree of acceptance as if there were a vacuum that needed to be filled," Dodds told *MT2*. Now, he added, "Another book needs to be written, addressing learning content." Using SCORM is "easy and low pain," he declared, enthusiastically noting that many tools are beginning to appear online from major and less well-known vendors alike. More importantly, "we're moving from beta users to products," Dodds noted.

## THE ADL NETWORK

In 1999, DoD established a vehicle to foster the collaborative research, develop-

**CONTINUED ON PAGE 16**



Centra's Symposium software.

ment and assessment of the tools, standards, and content emerging as a result of the ADL Initiative. This was the ADL Co-Laboratory, established at the Institute for Defense Analysis in Alexandria, VA, and operated by Concurrent Technologies Corp., which is headquartered in Johnstown, PA. Two other co-labs have been established, the Academic ADL Co-Lab in Madison, WI, and the Joint ADL Co-Lab in Orlando, FL. Dubbed the "command post of the ADL initiative and hub of the ADL Co-Laboratory Network," the Alexandria co-lab coordinates the development of SCORM and of policies and procedures for testing product conformance. Its sponsors include the DoD, the Department of Labor and the National Guard Bureau.

Established in January 2000, the Academic Co-Lab is located at the Pyle Center, University of Wisconsin-Extension in Madison. It serves as the ADL focal point and testbed for the nation's universities.

The Joint Co-Lab supports the implementation of ADL within DoD. It sponsors and develops prototype systems, as well as provides technical expertise to DoD program managers. Established in November 1999, it has sponsored several ADL prototypes and experiments such as the Model ADL Repository, operated by the Space and Navy Warfare Systems Command, that has introduced the concept of an enterprise portal/data warehouse supporting ADL. The portal would allow access to shareable courseware objects to assist course developers. Several co-lab projects involved the conversion of existing courses to ADL appropriate format. The goal of the Joint ADL Co-Lab is to strengthen collaboration and reduce risk to developers.

Another vehicle for collaboration has been the ADL Discussion Rooms, which support e-mail, a bulletin board, electronic conferences and chat servers. The latest version of SCORM has been available on the Web since its earliest form. The model serves as a baseline common standard that will grow and improve through collaboration. SCORM Version 1.1 is in its final edit, Dodds said, and he expects Version 1.2 before the end of 2001.

## AGREEING TO AGREE

"None of this could have been possible without the vision, hard work, enthusiasm and altruism of hundreds of ADL Initiative partners within the Department of Defense, other federal agencies, academia and the private sector," said Michael Parmentier, director, Readiness and Training, Office of the Secretary of Defense, when SCORM was released in early 2000. "We appear to be getting closer to a tipping point for e-learning as we move from concept to implementation. Standards organizations and vendors have agreed to agree on a single specification."

That agreement, resulting in SCORM, has led to the emergence of a variety of distance learning, SCORM-conformant learning management systems. "Many tools are coming online from all sorts of vendors," Dodds noted. "We've only just started: there are a whole list of next-generation issues to tackle."

*MT2* found that some firms have already begun tackling ADL next-generation issues.

San Jose, CA-based Cisco Systems Inc. President John Chambers has said, "E-learning has eliminated the barriers of time and distance, creating universal, learning-on-demand opportunities for people, companies and countries." Cisco and other giants such as Microsoft Corp., Redmond, WA, are joining the e-learning bandwagon, as industry, like the government, realizes that not just cost benefits are involved, but improved results. Research has established that students may retain more from e-learning than from a traditional classroom setting. Ironically, however, it seems that for this to be true, the e-learning experience should also emulate the classroom in some ways, allowing the student to participate through live interaction, chat rooms, etc.

In fact, there is a trend toward synchronous learning, which is live, just-in-time, and interactive. The term "e-learning" usually refers to a live, real-time learning system. Asynchronous learning consists of set coursework that may be accessed anywhere, anytime, but is essentially static, although an e-mail function or discussion group may be included. Course content dictates which type of distance learning is appropriate.

Centra Software Inc., Lexington, MA, provides software infrastructure and an environment for live Internet collaboration. Its vision includes changing how organizations communicate, collaborate and learn.

## CHANGING COMMUNICATION

Centra's software, Symposium, is providing distance learning for the U.S. Field Artillery School as part of the Total Army Distance Learning Program. The training is live and includes online problem solving, remedial assistance and audio conferencing. Centra's Knowledge Object Studio has tools for real-time capture, editing, indexing and playback of live, interactive online events and training sessions. Thus, if a student misses an event, or just wants to review it, he can retrieve it. Other features of the software include voice-over capabilities, collaborative online workspace, integrated application sharing and intuitive user interface allowing live conversation and interaction.

Click2Learn.com. Inc. of Bellevue, WA, has released its latest upgrade to its e-learning development toolset product, ToolBook II Instructor, Version 8, giving developers the ability to create content that complies with most standards including "the emerging SCORM standard." The product provides leading technology for developers seeking to create courses that will translate across different e-learning platforms.

Like other e-learning firms that create LMSs or other Web tools, click2learn has forged partnerships with firms that provide learning content, including Microsoft. The company's Web site offers courses and gives authors a publishing outlet.

Avilar Technologies Inc. of Laurel, MD, has been active in the development and use of SCORM. Its WebMentor LMS is SCORM-conformant. In fact, it includes a feature called SCORMfront that enhances the delivery of SCORM-conformant content without altering the content itself. Components of WebMentor include Enterprise, which provides administrative tools for student records, testing etc.; Author, a powerful course authoring system; Player, which provides CD ROM delivery; and Chat, which supports chat rooms, e-mail, personal notebooks and the like.

## SCORM STORM

Raytheon Co. of Lexington, MA, has been involved with distance learning and the SCORM development effort for some time, especially the creation of interactive electronic technical manuals (IETMs). Its Advanced Integrated Maintenance Support System is an IETM that conforms to SCORM.

"It is important to find ways of bringing training to reach the student's value system to optimize retention," said Bruce E. Peoples, technology integration director at Raytheon Technical Services Co. He is excited about achieving this through e-learning. Raytheon is also involved in converting some Air Force courseware to SCORM and multimedia formats.

Seattle-based Boeing Co. and CSC Inc. of El Segundo, CA, collaborated to convert an Army Apache course to the SCORM standard. Using Utopia 2000, a CSC-created tool, they converted an existing Apache lesson from its proprietary format to HTML. Boeing then added the SCORM-conformant code and partnered with Avilar and Pathlore Software Co., Columbus, OH, to use their LMS tools. Boeing is also involved with IETM development for aircraft technicians, sometimes on personal computing devices, and its Joint Strike Fighter program has incorporated SCORM-conformant training.

Pathlore's LMS has been supporting Bethesda, MD-based Lockheed Martin Federal Systems' contract for the Navy Learning Network (NLN), an initiative of the Chief of Naval Education and Training. The program provides 24-hour access and management of online training for 1.2 million personnel worldwide. The NLN infrastructure is hosting more than 400 courses and will continue to expand.

Toronto-based ISOPIA Inc. just released what it claims is the world's first SCORM-supported LMS, an incorporation of its Integrated Learning Management System and course content produced by Element K, a training company based in Rochester, NY. The application is being tested in a limited office environment.

Knowledge Mechanics of Grand Rapids, MI, has embraced the ADL concept, while emphasizing its reusability for multiple audiences and in multiple formats "on the fly." Its Studio 3.1 software, billed as "the next-generation authoring platform," has SCORM-conformant sharable courseware content.

At Plugfest 3, Knowledge Mechanics teamed with Saba Software Inc., Redwood Shores, CA, to prove interoperability between the two companies' platforms. Knowledge Mechanics developed and produced an ADL-conformant lesson on Studio 3.1, which was then exported to Saba's *Learning Enterprise* e-learning program. Enterprise Version 3 allows "single click" importing of online learning content and seamless connectivity to other IT components.

Chantilly, VA-based Litton TASC Inc.'s Virtual Schoolhouse program is an Internet-based, self-paced study system for duty-specific training through the online environment. The program, which is easily customized and SCORM-conformant, allows real-time monitoring of student progress, has a full suite of administrative tracking features and allows training anywhere, anytime. The Air Force Systems Acquisition School is using the Virtual Schoolhouse to train officers on complex systems acquisition requirements.

Nearly 100 firms, defense and other federal agencies signed up for Plugfest 3. Some of these are listed on the ADL Web site. ADL Co-Lab staff are still reviewing and collecting data; proceedings will be published in early 2001.

## THE WAY AHEAD

There is still much work to do before the ADL vision is realized. As discussed widely at I/ITSEC, users are seeking a way to apply the common standards approach to actual courseware content, so that course developers don't use outdated material or face a blank slate each time they create a training exercise or course. Further, the application would allow participants to build on one another's work.

The goals are lofty: increased excellence in professional education by sharing the wealth of creativity, knowledge, measurement tools, administrative functions and, as appropriate, course content, that make distance learning successful. To the extent that this remains compatible with the profit motive, it appears this Web-driven collaboration will continue to blossom.

One critical area of advanced professional education that the first version of SCORM does not tackle is simulation. CAE of Toronto, which has developed a distance learning simulation initiative called seLearning, told *MT2* that it looks forward to getting involved in the development of SCORM 2.0, which will address simulation requirements. With seLearning, CAE seeks to "bridge the gap between modeling and simulation and distance learning." The program provides freeplay interaction over the Web, whether for collaboration, training or online diagnostics. Its focus, CAE proclaims, "is on the learner rather than the instructor."

The newly approved Joint ADL Co-Lab project for the Army's Simulation Training and Instrumentation Command and the Marine Corps Training and Education Command will combine simulation with distributed learning.

At its onset, the ADL Initiative indicated it would measure its success by the extent to which consumers will be able to afford high-quality distance learning, by the expansion of the market and by the return on investment realized by software producers. Through the expanding use of SCORM, the continuing evolution of the standard and the next generation of collaborative partnerships, distance learning will grow in stature and capability. ✯

*For additional stories related to this subject, search our online archives: www.MT2-kmi.com/archives*